The attached information is provided to support the agency's review process and shall not be distributed to other parties without written consent from Bunt & Associates Engineering Ltd.

APPENDIX C

Traffic Analysis Warrants

630
MEDIAN TREATMENT

630.01 GENERAL

The primary use of median separation is to eliminate the risk of head-on collisions and to control access.

The standard median treatments are:

- no median separation (undivided road)
- narrow flush median with or without barrier
- depressed median with traversable slopes

630.02 GUIDELINES

Use the following guidelines and Figure 630.B when selecting a median treatment:

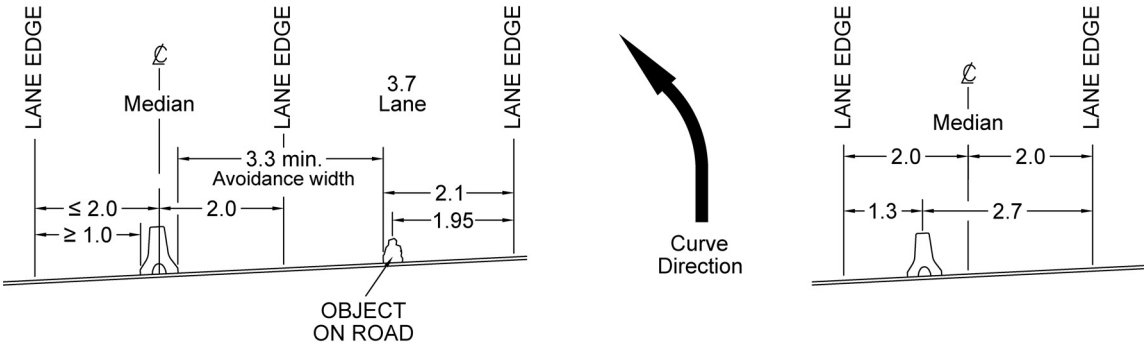
1. Median Barrier is not normally used, and a median separation is optional, on low speed multilane highways (posted speed less than 70 km/h).
2. For 4-lane rural arterials with less than 10,000 AADT[1] (two-way traffic), median barrier is not required unless indicated by collision history.
3. For 4-lane rural arterials with between 10,000 and 20,000 AADT[1], median barrier is not required unless indicated by collision history. However, the 2.6 m median without barrier should be used as a staged development, anticipating the future placement of barrier.
4. For rural arterials with 20,000 AADT[1] or greater, either the median barrier with narrow flush median, or the 13 metre wide depressed median should be used.
5. When barrier is to be installed on an existing facility which has less than the standard 2.6 m median, widening to 2.6 m is required to provide one metre of shy distance from the lane edge to the barrier.

   However, installation of median barrier on narrower medians may be approved by the Principal Highway Safety Engineer in special circumstances if safety, geometry, maintenance, and costs are adequately addressed.
6. Where sight distance may be restricted by tight curvature in conjunction with median barrier, the preferred treatment is to flatten the curves or use depressed median. However, these treatments may not be cost-effective when constructing in built up or mountainous areas.

   A modified median has been chosen to provide some additional sight distance and allow the driver some extra width to swerve safely around an object that partially obstructs the inside lane. See Figure 630.A.

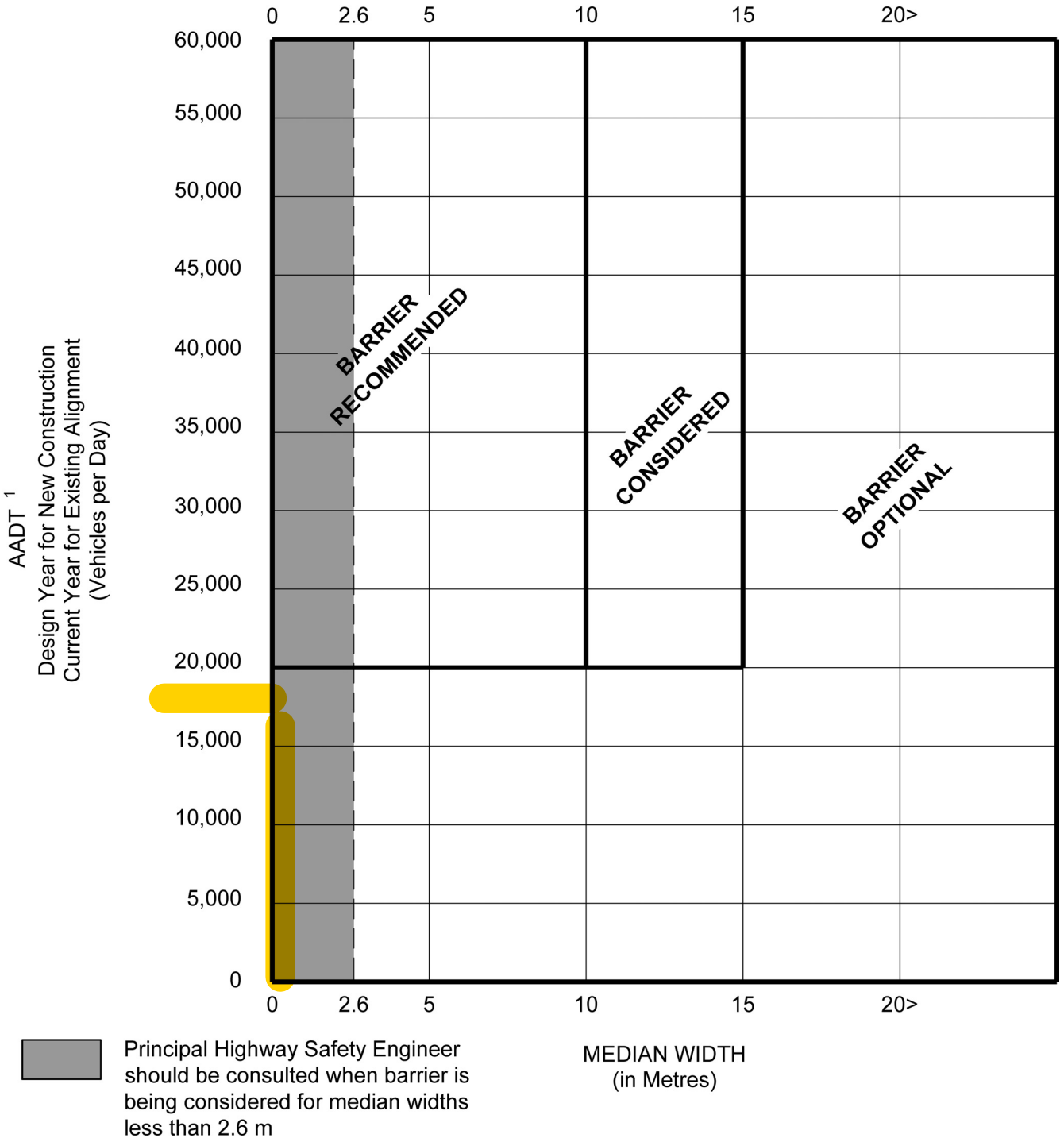
   The modified treatment has a symmetrical 4 m median separation; in very tight situations, you may consider installing the barrier on the side without sight restriction with 1.3 m separation from lane edge to centerline of barrier.

Figure 630.A Modified Median



[1] Contact Regional or Headquarters Planning for the SADT to AADT conversion factors for your projects.

Figure 630.B Guidelines for Median Barrier Placement



[1] Contact Regional or Headquarters Planning for the SADT to AADT conversion factors for your projects.

402.3.4 Warrant 3: Progressive Movement

.1 This warrant applies when traffic signal installation is necessary for progressive movement control, which maintains proper grouping of vehicles and effectively regulates group speed.

.2 This warrant is satisfied when one of the following is true:

.1 Adjacent signals on a one-way street or a street with predominantly unidirectional traffic are so far apart that they do not provide the necessary degree of vehicle platooning and speed control.

.2 Adjacent signals on a two-way street do not provide the necessary degree of platooning and speed control. The proposed and existing adjacent signals could constitute a progressive signal system.

.3 Using this warrant, signal installation should:

.1 Be based on the 85th percentile speed unless an engineering study indicates that another speed is more desirable.

.2 Not be considered where the resulting signal spacing would be less than 300 meters.

402.3.5 Warrant 4: Collision Experience

.1 This warrant is satisfied when all the following are met:

4 rear end and 2 side impact in the last 5 years - Causalty crashes

.1 Adequate trials of less restrictive remedies with satisfactory observance and enforcement have failed to reduce the collision frequency.

.2 Five or more reported collisions, of types “susceptible” to correction by traffic signal control, have occurred within a 12-month period, with each collision involving personal injury or property damage of $5000 or more.

.3 The installation of a signal would allow progressive traffic flow.

402.3.6 Warrant 5: System Warrant

.1 Traffic signal installations may be warranted at some intersections to encourage the concentration and organization of traffic flow networks.

.2 To be considered a major route, the road shall have at least one of the following characteristics. A major route:

.1 Is part of the street or highway system that serves as the principal network for through-traffic flow.

.2 It includes rural or urban highways outside, entering or traversing a city.

MOTI - Traffic Signal Warrant Analysis

Main Street (name)	HWY 6	Direction (EW or NS)	NS	Road Authority:	MOTI
Side Street (name)	Pottery Road	Direction (EW or NS)	EW	City:	City of Vernon
Quadrant / Int #		Comments	Enter Comments about the analysis here.	Analysis Date:	2025 Feb 18, Tue
for Warrant Calculation Results, please hit 'Page Down'	CHECK SHEET			Count Date:	2025 Jan 29, Wed
				Date Entry Format:	(yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes
HWY 6	NB	1		2			1	350	2
HWY 6	SB	1		2			1	650	2
Pottery Road	WB	1		1			1		
Pottery Road	EB	1		1			1		

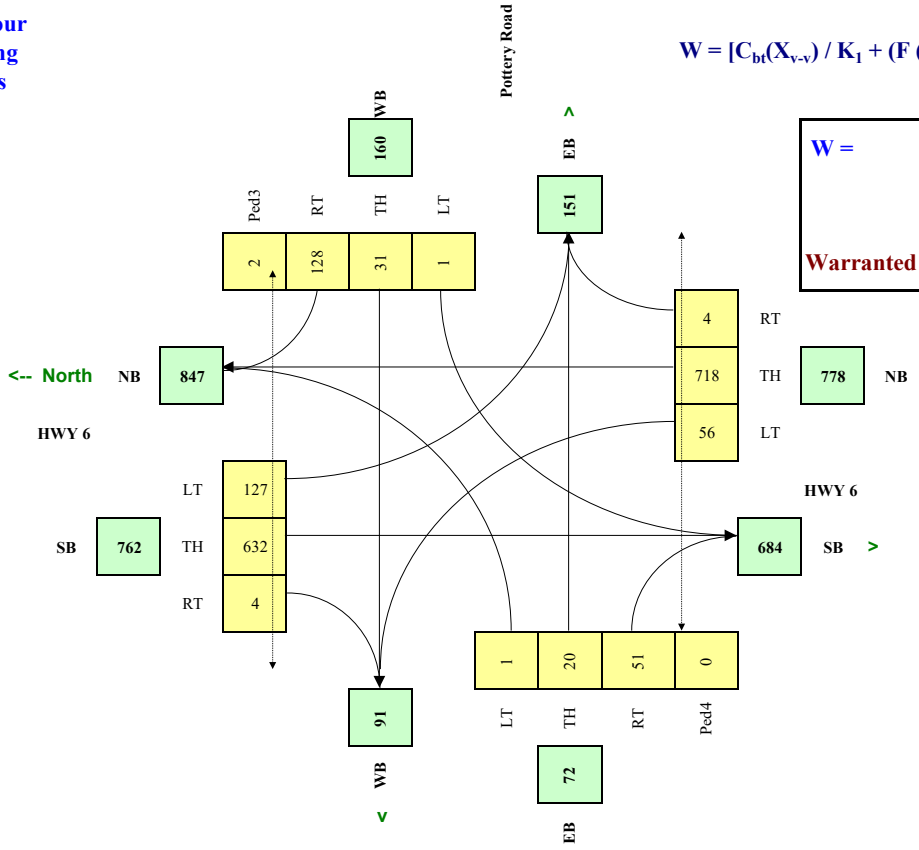
Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	44,500
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
HWY 6	NS	50	5.0%	y	
Pottery Road	EW		1.0%	n	

Set Peak Hours

Traffic Input	NB			SB			WB			EB			Ped1 NS	Ped2 NS	Ped3 EW	Ped4 EW
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	W Side	E Side	N Side	S Side
press 'Set Peak Hours' Button to set the peak hour periods	73	767	2	53	446	1	1	42	143	1	2	13	2	0	3	1
	67	911	8	115	421	4	0	39	186	0	12	37	0	0	0	0
	53	634	3	87	524	2	0	29	94	2	15	37	0	1	0	0
	42	623	4	120	617	0	0	32	104	0	27	62	0	0	2	0
	60	743	4	193	862	12	2	21	129	1	24	80	1	0	2	0
	42	629	5	192	920	5	1	24	110	2	38	78	3	0	2	0
Total (6-hour peak)	**337**	**4,307**	**26**	**760**	**3,790**	**24**	**4**	**187**	**766**	**6**	**118**	**307**	**6**	**1**	**9**	**1**
Average (6-hour peak)	**56**	**718**	**4**	**127**	**632**	**4**	**1**	**31**	**128**	**1**	**20**	**51**	**1**	**0**	**2**	**0**

Average 6-hour Peak Turning Movements



$$W = [C_{bt}(X_{v\text{-}v}) / K_1 + (F\,(X_{v\text{-}p})\,L) / K_2] \times C_i$$

W =	127	124	3
		Veh	*Ped*

Warranted

RESET SHEET

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MOTI - Traffic Signal Warrant Analysis

Main Street (name)	HWY 97	Direction (EW or NS)	NS	Road Authority:	MOTI
Side Street (name)	21st Avenue	Direction (EW or NS)	EW	City:	City of Vernon
Quadrant / Int #		Comments	Enter Comments about the analysis here.	Analysis Date:	2025 Feb 18, Tue
for Warrant Calculation Results, please hit 'Page Down'	CHECK SHEET			Count Date:	2025 Jan 29, Wed
				Date Entry Format:	(yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes
HWY 97	NB			1		1		500	2
HWY 97	SB	1		2				340	2
21st Avenue	WB	1					1		
21st Avenue	EB								

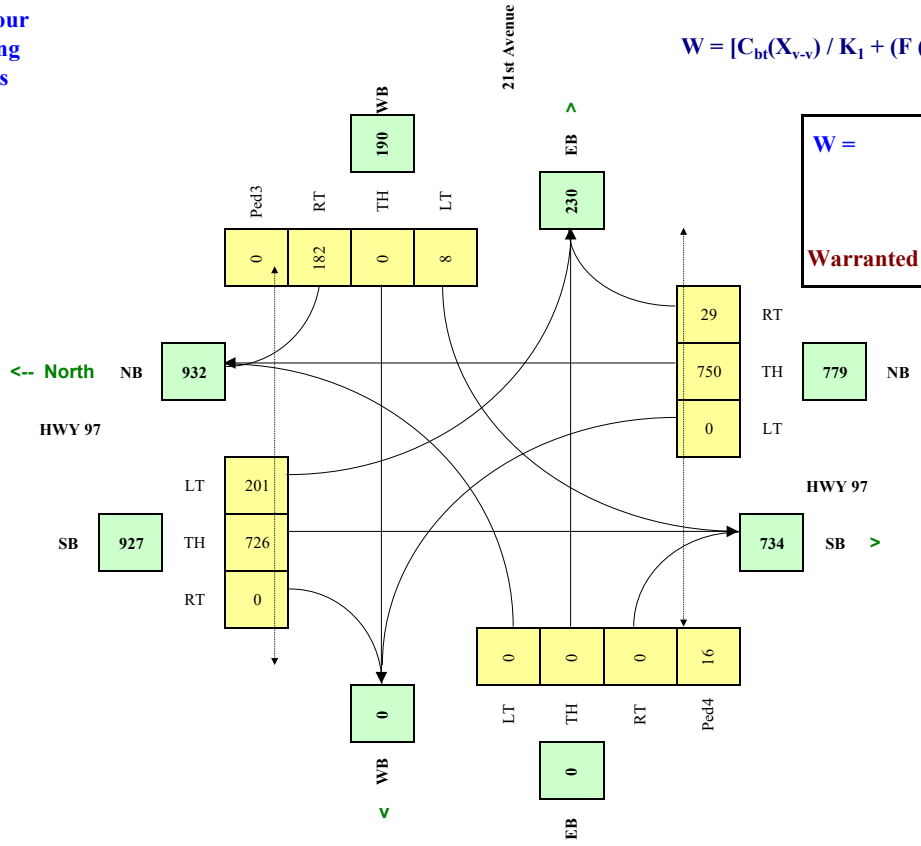
Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	44,500
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
HWY 97	NS	50	7.0%	y	
21st Avenue	EW		2.0%	y	

Set Peak Hours

Traffic Input	NB			SB			WB			EB			Ped1 NS	Ped2 NS	Ped3 EW	Ped4 EW
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	W Side	E Side	N Side	S Side
press 'Set Peak Hours' Button to set the peak hour periods	0	582	36	287	650	0	10	0	127	0	0	0	0	6	0	16
	0	792	66	234	720	0	3	0	118	0	0	0	0	8	0	20
	0	639	20	190	646	0	5	0	191	0	0	0	0	7	0	14
	0	661	21	203	704	0	11	0	179	0	0	0	0	1	0	7
	0	968	19	161	813	0	4	0	284	0	0	0	0	2	0	22
	0	857	13	130	823	0	16	0	193	0	0	0	0	4	0	15
Total (6-hour peak)	**0**	**4,499**	**175**	**1,205**	**4,356**	**0**	**49**	**0**	**1,092**	**0**	**0**	**0**	**0**	**28**	**0**	**94**
Average (6-hour peak)	**0**	**750**	**29**	**201**	**726**	**0**	**8**	**0**	**182**	**0**	**0**	**0**	**0**	**5**	**0**	**16**

Average 6-hour Peak Turning Movements



$$W = [C_{bt}(X_{v\text{-}v}) / K_1 + (F\,(X_{v\text{-}p})\,L) / K_2] \times C_i$$

W =	187	161	26
		Veh	*Ped*

Warranted

RESET SHEET

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MOTT - Traffic Signal Warrant Analysis

Main Street (name)	Hwy97	Direction (EW or NS)	NS	Road Authority:	MOTT
Side Street (name)	16th Ave	Direction (EW or NS)	EW	City:	City of Vernon
Quadrant / Int #		Comments	Enter Comments about the analysis here.	Analysis Date:	2025 Feb 18, Tue
for Warrant Calculation Results, please hit 'Page Down'	CHECK SHEET			Count Date:	2025 Jan 29, Wed
				Date Entry Format:	(yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes
Hwy97	NB		1			1		1,000	2
Hwy97	SB		1			1		844	2
16th Ave	WB				1				
16th Ave	EB				1				
Are the 16th Ave WB right turns significantly impeded by through movements? (y/n)							n		
Are the 16th Ave EB right turns significantly impeded by through movements? (y/n)							n		

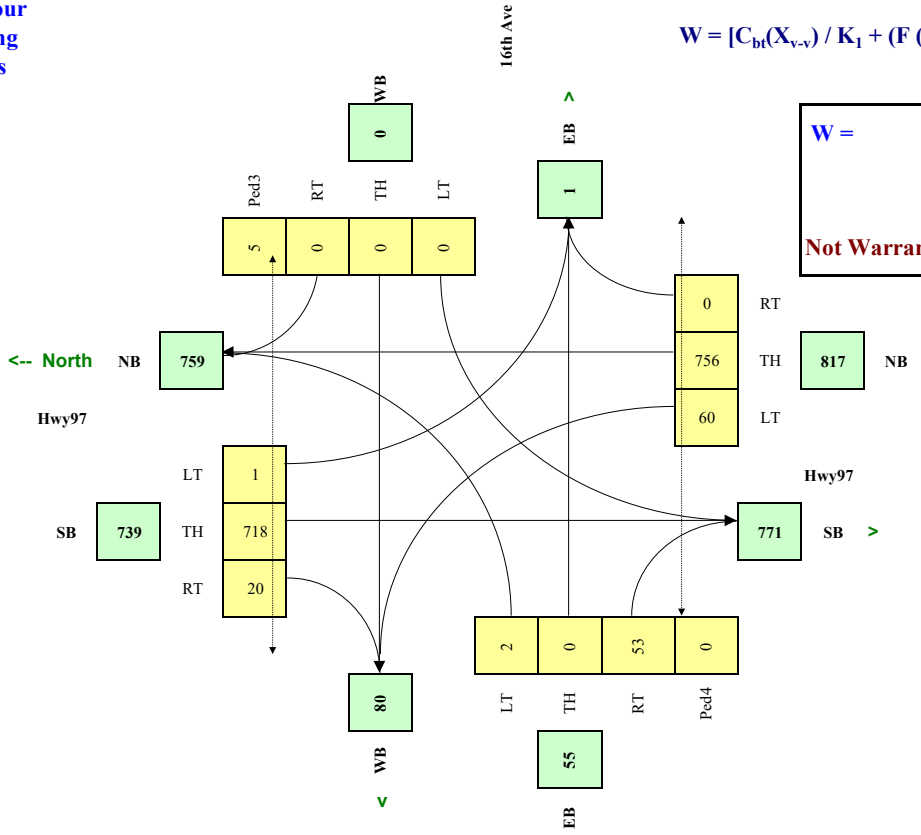
Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	44,500
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
Hwy97	NS	50	7.0%	y	
16th Ave	EW		5.0%	y	

Set Peak Hours

Traffic Input	NB			SB			WB			EB			Ped1 NS	Ped2 NS	Ped3 EW	Ped4 EW
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	W Side	E Side	N Side	S Side
press 'Set Peak Hours' Button to set the peak hour periods	35	617	0	0	672	10	0	0	0	1	0	64	0	0	2	0
	62	826	0	0	702	13	0	0	0	6	0	66	3	12	8	0
	41	645	1	0	635	11	0	0	0	2	0	36	0	1	4	0
	57	677	0	3	691	17	0	0	1	4	0	43	2	1	4	0
	83	944	0	0	818	33	0	0	0	0	0	58	1	4	8	0
	84	828	0	1	791	35	0	0	0	1	0	50	2	2	5	0
Total (6-hour peak)	**362**	**4,537**	**1**	**4**	**4,309**	**119**	**0**	**0**	**1**	**14**	**0**	**317**	**8**	**20**	**31**	**0**
Average (6-hour peak)	**60**	**756**	**0**	**1**	**718**	**20**	**0**	**0**	**0**	**2**	**0**	**53**	**1**	**3**	**5**	**0**

Average 6-hour Peak Turning Movements



$$W = [C_{bt}(X_{v\text{-}v}) / K_1 + (F\,(X_{v\text{-}p})\,L) / K_2] \times C_i$$

W =	46	37	9
		Veh	*Ped*

Not Warranted - Vs<75

RESET SHEET

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MOTT - Traffic Signal Warrant Analysis

Main Street (name)	Hwy97	Direction (EW or NS)	NS
Side Street (name)	35th Ave	Direction (EW or NS)	EW
Quadrant / Int #		Comments	Enter Comments about the analysis here.
for Warrant Calculation Results, please hit 'Page Down'	CHECK SHEET		

Road Authority:	MOTT
City:	City of Vernon
Analysis Date:	2025 Feb 18, Tue
Count Date:	2025 Jan 29, Wed
Date Entry Format:	(yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes
Hwy97	NB		1			1		300	2
Hwy97	SB		1			1		230	2
35th Ave	WB				1				
35th Ave	EB				1				
Are the 35th Ave WB right turns significantly impeded by through movements? (y/n)							n		
Are the 35th Ave EB right turns significantly impeded by through movements? (y/n)							n		

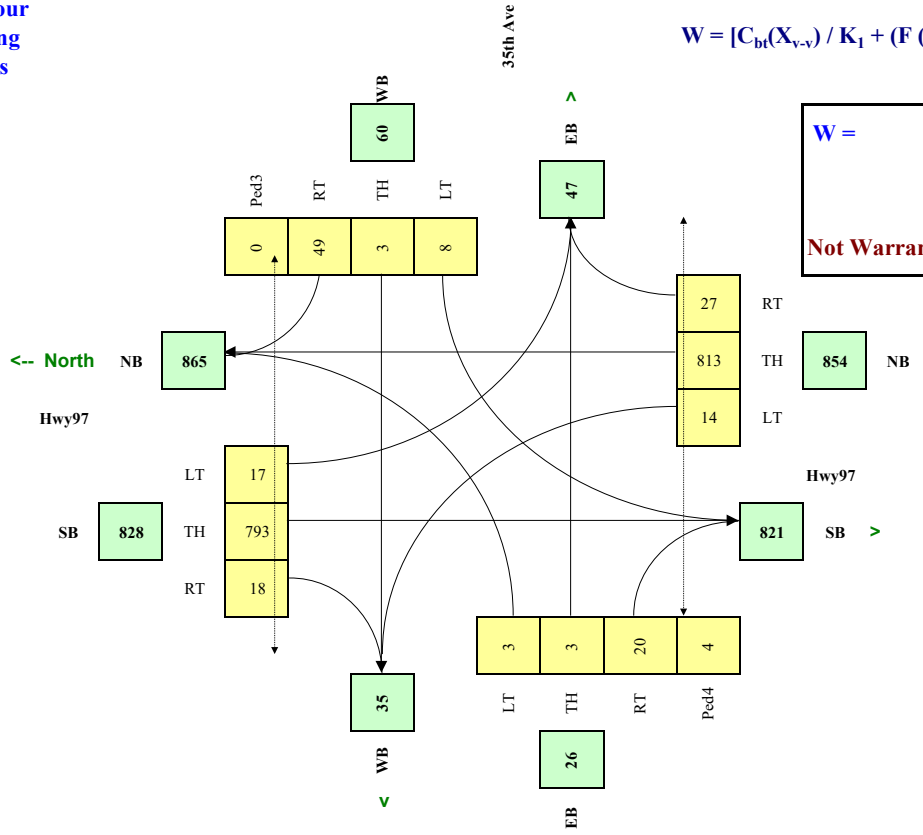
Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	44,500
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
Hwy97	NS	50	6.0%	n	
35th Ave	EW		2.0%	n	

Set Peak Hours

Traffic Input	NB			SB			WB			EB			Ped1 NS	Ped2 NS	Ped3 EW	Ped4 EW
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	W Side	E Side	N Side	S Side
press 'Set Peak Hours' Button to set the peak hour periods	14	559	23	14	609	15	5	2	17	5	2	19	4	5	1	7
	15	694	39	23	699	11	6	2	41	0	3	10	15	6	0	8
	12	843	41	23	822	20	7	2	49	1	3	12	4	7	1	3
	9	850	22	14	892	19	7	4	46	6	5	19	5	11	0	2
	11	999	19	16	873	29	13	7	85	2	3	22	16	12	0	1
	22	932	20	11	864	16	7	1	58	3	3	39	8	4	0	1
Total (6-hour peak)	83	4,877	164	101	4,759	110	45	18	296	17	19	121	52	45	2	22
Average (6-hour peak)	14	813	27	17	793	18	8	3	49	3	3	20	9	8	0	4

Average 6-hour Peak Turning Movements



$$W = [C_{bt}(X_{v\text{-}v}) / K_1 + (F\,(X_{v\text{-}p})\,L) / K_2] \times C_i$$

W =	42	35	7
		Veh	*Ped*

Not Warranted - Vs<75

RESET SHEET

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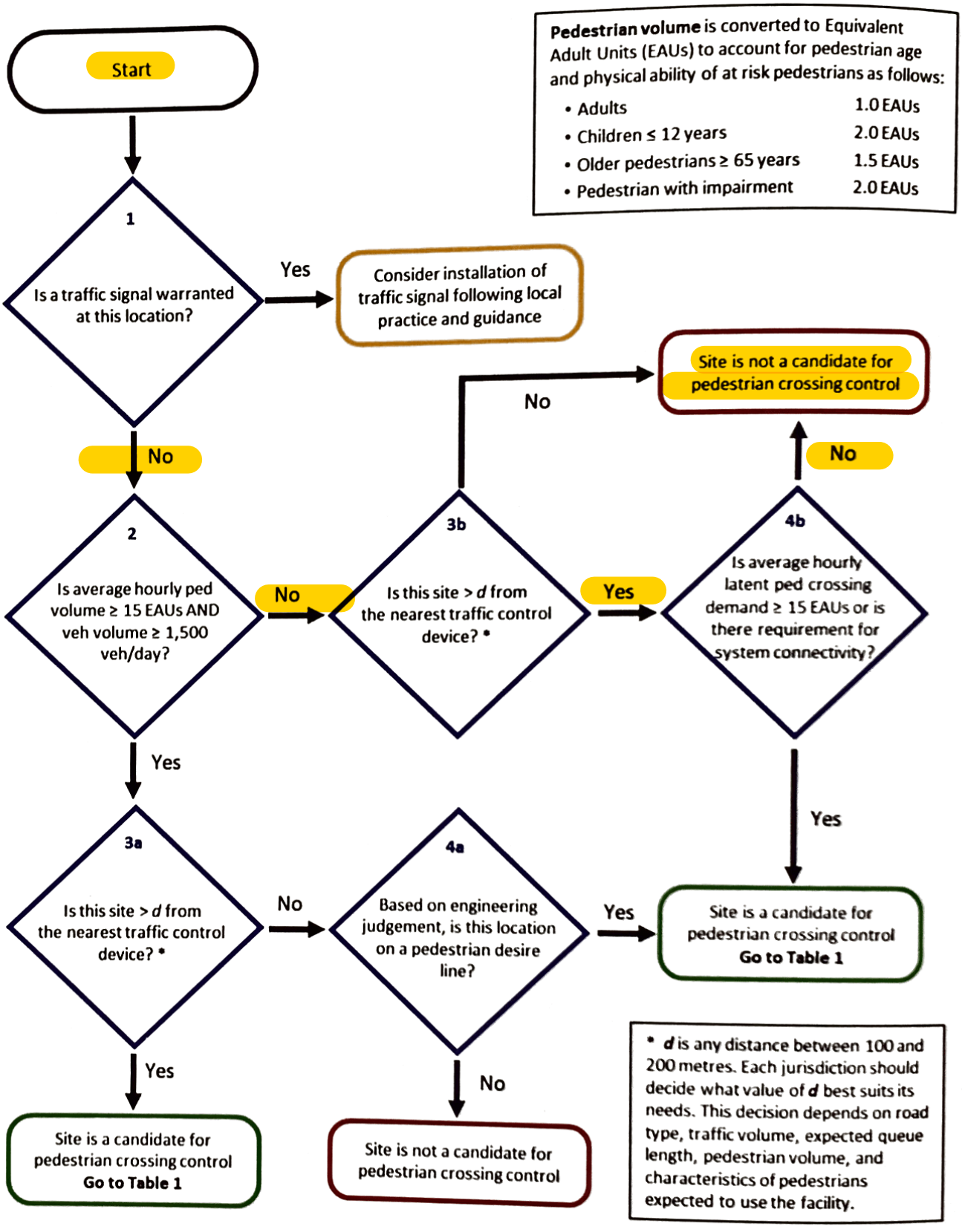


Figure 8: Decision Support Tool – Preliminary Assessment

MOTT - Traffic Signal Warrant Analysis

Main Street (name)	Hwy97	Direction (EW or NS)	NS	Road Authority:	MOTT
Side Street (name)	41st Street	Direction (EW or NS)	EW	City:	City of Vernon
Quadrant / Int #		Comments	Enter Comments about the analysis here.	Analysis Date:	2025 Feb 18, Tue
for Warrant Calculation Results, please hit 'Page Down'	CHECK SHEET			Count Date:	2025 Jan 29, Wed
				Date Entry Format:	(yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes
Hwy97	NB		1			1		250	2
Hwy97	SB		1			1		250	2
41st Street	WB				1				
41st Street	EB				1				
Are the 41st Street WB right turns significantly impeded by through movements? (y/n)							n		
Are the 41st Street EB right turns significantly impeded by through movements? (y/n)							n		

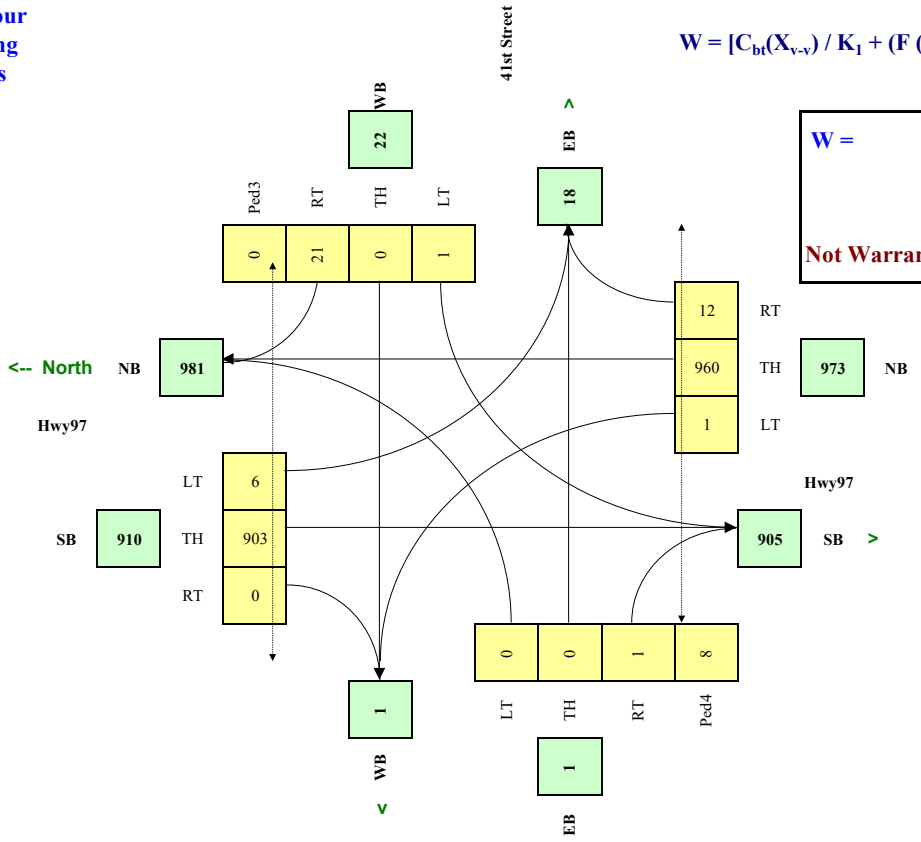
Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	44,500
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
Hwy97	NS	50	5.0%	n	
41st Street	EW		1.0%	n	

Set Peak Hours

Traffic Input	NB			SB			WB			EB			Ped1 NS	Ped2 NS	Ped3 EW	Ped4 EW
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	W Side	E Side	N Side	S Side
press 'Set Peak Hours' Button to set the peak hour periods	0	556	5	0	672	0	2	0	13	0	0	0	8	4	0	2
	0	783	17	3	810	0	1	0	12	0	0	0	29	2	0	18
	2	1071	12	5	940	0	2	0	28	0	0	1	7	7	0	7
	0	1047	12	11	981	2	1	0	18	0	0	1	14	4	0	6
	2	1181	15	5	1016	0	0	0	30	0	0	1	15	11	0	6
	0	1122	10	12	1000	0	0	0	25	0	1	2	15	9	0	8
Total (6-hour peak)	**4**	**5,760**	**71**	**36**	**5,419**	**2**	**6**	**0**	**126**	**0**	**1**	**5**	**88**	**37**	**0**	**47**
Average (6-hour peak)	**1**	**960**	**12**	**6**	**903**	**0**	**1**	**0**	**21**	**0**	**0**	**1**	**15**	**6**	**0**	**8**

Average 6-hour Peak Turning Movements



$$W = [C_{bt}(X_{v\text{-}v}) / K_1 + (F\,(X_{v\text{-}p})\,L) / K_2] \times C_i$$

W =	23	8	15
		Veh	*Ped*

Not Warranted - Vs<75

RESET SHEET

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